

Application No.: 10/660,054
Amendment Dated: February 16, 2009
Reply to Office Action of: December 26 2008

MAT-8260US1

Remarks/Arguments:

I. Status of Claims

Claims 37, 40, 59, 76, 84-87 and 96-105 are pending. Claim 76 is amended herein to correct an inadvertent typographical error. Entry and consideration of this Amendment are respectfully requested and are considered proper, in order to place the application in condition for allowance or, alternatively, in better form for consideration on appeal.

II. Rejection of Claims 37, 40, 76, 85-87 and 96-105 under 35 U.S.C. Section 103(a)

Applicants traverse the rejection of Claims 37, 40, 76, 85-87 and 96-105 under 35 U.S.C. Section 103(a) as being unpatentable over Kawakita et al. (US 5,960,538) in view of Gause et al. (US 3,895,158), in view of Yuhas et al. (US 5,350,621) and in view of Arlon Inc., "Non-woven aramid reinforcements", March 27, 1995, and respectfully request reconsideration and withdrawal of the rejection for the reasons set forth in Applicants' Response of September 5, 2008, and Applicants' Amendment of March 28, 2008.

Additionally, Applicants wish to respond specifically to the Examiner's remarks in Paragraph 5 of the Office Action mailed December 26, 2008, concerning the disclosure of the Gause et al. reference (US 3,895,158). The Examiner has directed Applicants' attention to Example 1 of the Gause et al. reference, which used a paper/resin layer between glass/resin layers. From the information presented in Example 1 as well as information obtained from other sources, the Examiner has calculated that the paper in the paper/resin layer had a density of 1.12 g/cc and that the glass in the glass/resin layers had a density of 1.6 g/cc. From these calculations, the Examiner concludes that "[t]he relative proportions of the paper and glass used in the layer structure of Gauss results in a density of fibrous material which is lower for the center layer than for the surface layer(s)."

Applicants respectfully submit that the calculations performed by the Examiner are in error and that the conclusions reached as a result of those calculations are therefore not well founded.

Example 1 of the Gause reference states that the paper used in the paper/resin layer had a "density of 6-7 pounds/Pt." (Column 7, Lines 43-44) and a nominal thickness of 20 mils (Column 7, Lines 42-43). A density of 6-7 pounds/Pt. means that the paper weighed 6-7 pounds per point of caliber. As explained at Column 4, Lines 24-28 of US 4,433,843 (a copy of which is attached herewith as Exhibit A), a point of caliber is equal to 0.001 inches (1 mil) and a paper web having a density of 3.5 pounds per point of caliber means that one thousand square feet of paper having a thickness of 0.001 inches would weigh 3.5 pounds. Thus, one thousand square feet of the paper used in Example 1 of the Gause reference (which was 0.020 inches or 0.00167 feet thick, meaning that one thousand square feet of the paper would have a volume of 1.67 ft^3) would weigh 120 to 140 pounds. This means that the true density of the paper (as expressed in lbs/ft^3) would be 120-140 lbs/1.67 ft^3 or 71.9-83.8 lbs/ft^3 , which is equal to a density of 1.15-1.34 g/cc.

In Example 1 of the Gause reference, the glass used is described as "ASSTM Style 594-4 (Clark-Schwebel Fiber Glass Corp. Style 7628) woven glass fabric having a nominal thickness of 7 mils [= 0.000195 yards]" (Column 8, Lines 18-20). This type of glass fabric has a weight of 5.80 ozs./sq. yd. (Column 4, Lines 35-36). The true density of the glass fabric was therefore 5.8 ozs./sq. yd divided by 0.000195 yd = 29,744 ozs/yd³ or 1.10 g/cc.

Thus, the glass used in the glass/resin layers of Example 1 of the Gause reference had a lower density than the paper used in the paper/resin layers (1.10 g/cc vs. 1.15-1.34 g/cc).

In contrast, Applicants' invention, as reflected in pending independent Claims 37 and 76, is directed to a clad board which includes a fiber sheet comprised of:

an inside layer having two faces and two surface layers,
one of which surface layers is disposed on each face of
the inside layer;

and

wherein the density of the non-woven fabric in the inside layer is lower than the density of the non-woven fabric in each of the surface layers.

Applicants' invention thus utilizes an inside layer containing a non-woven fabric with a density lower than that of the non-woven fabric present in the surface layers. This arrangement is the opposite of what is described in Example 1 of the Gause reference where the density of the paper used in the inside layer was higher than that of the glass used in the surface layers.

Additionally, the glass fabric utilized in Example 1 of the Gause reference was a woven fabric, rather than a non-woven fabric as recited in Applicants' claims currently under examination.

A worker of ordinary skill in the art would not have found it obvious to modify the reference teachings to arrive at the subject matter embraced by Applicants' claims, i.e., to use a non-woven fabric rather than a woven fabric and to select a non-woven fabric for use in the inside layer that has a lower density than the non-woven fabric used in the surface layers.

III. Rejection of Claims 59 and 84 under 35 U.S.C. Section 103(a)

Applicants traverse the rejection of Claims 59 and 84 under 35 U.S.C. Section 103(a) as being unpatentable over Kawakita et al. (US 5,960,538) in view of Gause et al. (US 3,895,158), in view of Yuhas et al. (US 5,350,621) and in view of Arlon Inc., "Non-woven aramid reinforcements", March 27, 1995, and further in view of Nakatani et al. (US 6,096,411). Applicants respectfully request reconsideration and withdrawal of the rejection for the reasons set forth in Applicants' Response of September 5, 2008, and Applicants' Amendment of March 28, 2008. As the Examiner's maintenance of this rejection appears to be based on the disclosure of Example 1 of the Gause et al. reference, as explained in Paragraph 5 of the Office Action mailed December 26, 2008, Applicants further request reconsideration and withdrawal of the rejection in view of the remarks concerning the Gause reference set forth in Section II of this Amendment.

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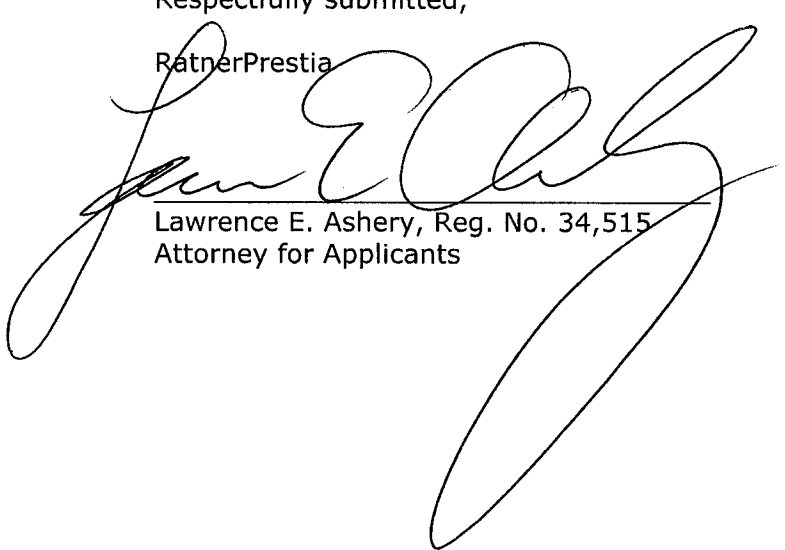
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IV. Conclusion

It is respectfully submitted that the claims are in condition for immediate allowance and a notice to that effect is earnestly solicited. The Examiner is invited to phone Applicants' attorney at the number shown below if it is believed that an interview would expedite further prosecution of the application.

Respectfully submitted,

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